

6. Budget: **TOBACCO INDUSTRY RESEARCH COMMITTEE**
350 FIFTH AVENUE, NEW YORK 1, N. Y.
Permanent Equipment
Application For Research Grant

EQUIPMENT:

Other

c. **smoking**

Date:

August 9, 1954

7. Anticipated Duration of Work

1. Name of Investigator: **Maurice S. Segal, M.D.**

2. Title: **Clinical Professor of Medicine, Tufts College Medical School, Boston, Mass.
Director, Department of Inhalational Therapy, Boston City Hospital.**

3. Institution
& Address:

**Tufts College Medical School, 136 Harrison Avenue, Boston, Mass.
Boston City Hospital, 818 Harrison Avenue, Boston, Mass.
Department of Inhalational Therapy.**

4. Project or Subject: **SUPPLEMENTARY PROTOCOL FOR STUDY OF THE EFFECTS OF TOBACCO**

9. Additional Requirements: **SMOKING ON RESPIRATION AND CIRCULATION**

AIM: Differentiation between the normal -- tobacco bronchitis and other types of bronchitis.

DISCUSSION:

Several communications have appeared in the literature discussing the significance of a type of bronchitis (coughing, wheezing and shortness of breath) (cont'd on back)

5. Detailed Plan of Procedure: (Use reverse side if additional space is needed)

a. **Pre-motachogram:** Study of various air flow rate and volume patterns, and correlation to clinical picture and smoking.

1. Intrapleural pressure: Routine intra-esophageal pressure studies but when possible direct intrapleural measurements will be made. Evolution of the visco-elastic properties of the lungs can be made. Differentiation of forces needed to overcome resistance to air flow and resistance to tissue deformation can be made by breathing different gas mixtures on the normal lung.

2. Venous pressure: Influence of different breathing patterns on circulation and cardiac output.

3. Arterial pressure: Influence of different breathing patterns on arterial pressure and cardiac output. Blood gases and pH determinations can be made when advisable.

4. Measurement of the work of breathing: The work of breathing may be separated into its different components by plotting of the pressure-volume diagrams obtained from flow above. In this manner the work to overcome airway elastic forces, viscous forces and the active work during expiration can be determined. (cont'd on back)

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4. (cont'd.)

breath) noted in cigarette smokers. This has been referred to as smokers' or tobacco bronchitis. Allergic and specific irritant factors have been suggested as responsible. Some investigators empirically suggest that all patients with coughing or wheezing of any etiology omit all smoking. Others urge that deliberate pre-operative consideration of the patient's smoking habits be made in judging the type of anesthesia to be employed and measures to prevent post-operative pulmonary complications, which are said to be higher in these patients. On the other hand it appears to some that the mild bronchitis observed in cigarette smokers is so common as to be normal. Most of this data appear as clinical observations.

CONJECTURE AND SPECULATION

The effect of cigarette smoking has not been thoroughly investigated in regard to correlation of the effects on respiration and circulation. This should be done to determine what effects, if any, smoking has on the normal lung and in the patient with established bronchitis. The definition of the so-called "tobacco cough and wheeze" at best remains vague. Differentiation among the types of effect is important. PROJECT OR SUBJECT IS: EFFECTS OF TOBACCO SMOKE ON RESPIRATION

Study of normal non-smokers of various age groups in decades.

A. Study of normal smokers of various age groups in decades.

a. Cigarette smokers with and without habitual inhalation.

b. Cigar smokers with and without habitual inhalation.

c. Pipe smokers with and without habitual inhalation.

3. Study of smokers with tobacco bronchitis in relation to age, amount of smoking and habitual inhalation.

of production

a. Cigarette smokers.

b. Cigar smokers.

c. Pipe smokers.

4. Study of bronchitis of other types in:

a. Non-smokers.

b. Smokers.

5. Correlation of the above data with:

a. Routine pulmonary function studies — lung volumes and subdivisions, maximum breathing capacity, index of intrapulmonary mixing, and arterial blood gas studies.

b. Clinical and x-ray picture.

c. Smoking.

EQUIPMENT:

Complete pulmonary function study equipment.
Sanborn 4-channel oscillograph — direct writer
Pneumotachograph apparatus
Necessary gauges and amplifiers for simultaneous recording.

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6. Budget Plan:

Salaries

Expendable Supplies

Permanent Equipment

Overhead

Other

Total

7. Anticipated Duration of Work:

1. Dates of Project Salary

8. Facilities and Staff Available:

Principal Professor of Medicine, Tufts College Medical School, Boston, Mass.
Director, Department of Inhalational Therapy, Boston City Hospital.

Tufts College Medical School, 136 Harrison Avenue, Boston, Mass.
Boston City Hospital, 313 Harrison Avenue, Boston, Mass.
Department of Inhalational Therapy.

9. Additional Requirements: **FLUENT VENTILATION FOR STUDY OF THE EFFECTS OF TOBACCO
SMOKING ON RESPIRATION AND CIRCULATION**

1. Effect of tobacco on the normal -- tobacco bronchitis and other types of bronchitis.

2. Effect of tobacco on the normal -- tobacco bronchitis and other types of bronchitis.

10. Additional Information (Including relation of work to other projects and other sources of supply) **cont'd. on back**

1. **RESPIRATORY** - Study of various air flow rate and volume patterns, and correlation to clinical practice and findings. The following are suggested:

1. **RESPIRATORY** - Study of various air flow rate and volume patterns, and correlation to clinical practice and findings. The following are suggested:

2. **VENTILATION** - Influence of different breathing patterns on ventilation and carbon output.

3. **RESPIRATORY** - Influence of different breathing patterns on ventilation and carbon output.

4. **RESPIRATORY** - Influence of different breathing patterns on ventilation and carbon output.

Business Officer of the Institution

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